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(54) **REMOTE USER INTERFACE FOR MEDIA PLAYER**

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(22) Filed: **Sep. 4, 2009**

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(60) Provisional application No. 60/407,174, filed on Aug. 30, 2002.

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G06F 17/00 (2006.01)
G06F 3/00 (2006.01)

(52) **U.S. Cl.**
USPC **700/94**; 715/716; 710/19; 710/46

(58) **Field of Classification Search**
USPC 340/3.51; 345/2.1; 370/346; 379/92.01; 700/94; 709/212, 220; 710/19, 46, 47, 109, 710/220; 715/273, 716, 727, 740, 746, 864; 719/322, 323
See application file for complete search history.

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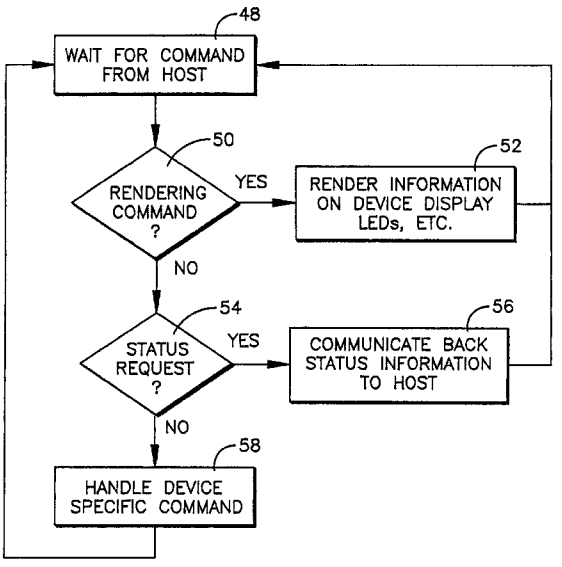
(57) **ABSTRACT**

A portable media player communicates with a host computer for enabling a user of the player to manage media distribution using the control software of the host computer. The host computer can send a GUI that is displayed on the otherwise "dumb" player, and the user can view the GUI and press a single button to command the control software to download a media title to the player. The host computer can periodically poll the player to determine its status.

16 Claims, 3 Drawing Sheets



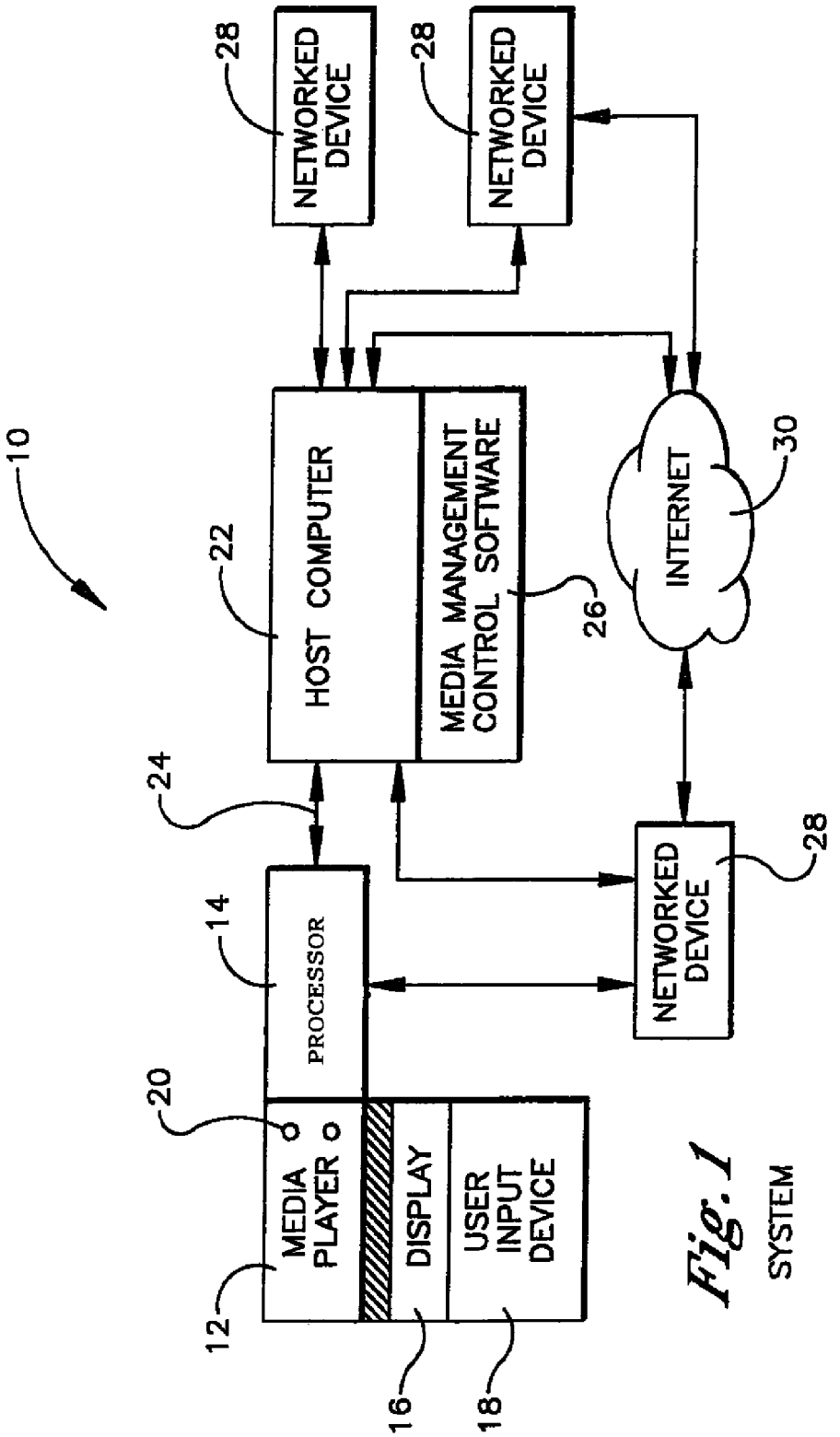

10
28
NETWORKED DEVICE
28
NETWORKED DEVICE
22
HOST COMPUTER
MEDIA MANAGEMENT CONTROL SOFTWARE
26
INTERNET
30
24
14
PROCESSOR
NETWORKED DEVICE
28
20
MEDIA PLAYER
DISPLAY
USER INPUT DEVICE
12
16
18

Fig. 1

SYSTEM

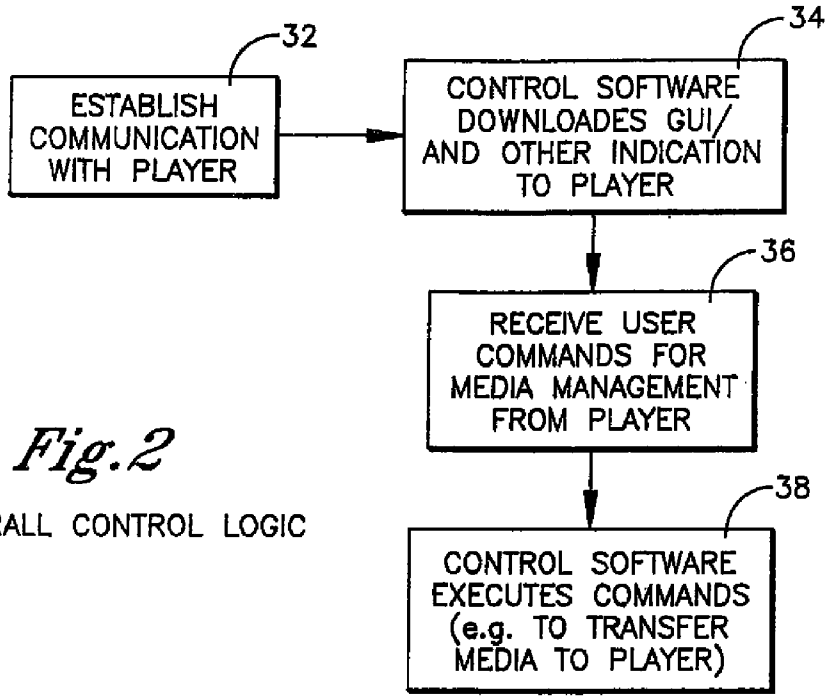

32
ESTABLISH COMMUNICATION WITH PLAYER
34
CONTROL SOFTWARE DOWNLOADES GUI/ AND OTHER INDICATION TO PLAYER
36
RECEIVE USER COMMANDS FOR MEDIA MANAGEMENT FROM PLAYER
38
CONTROL SOFTWARE EXECUTES COMMANDS (e.g. TO TRANSFER MEDIA TO PLAYER)

Fig. 2

OVERALL CONTROL LOGIC

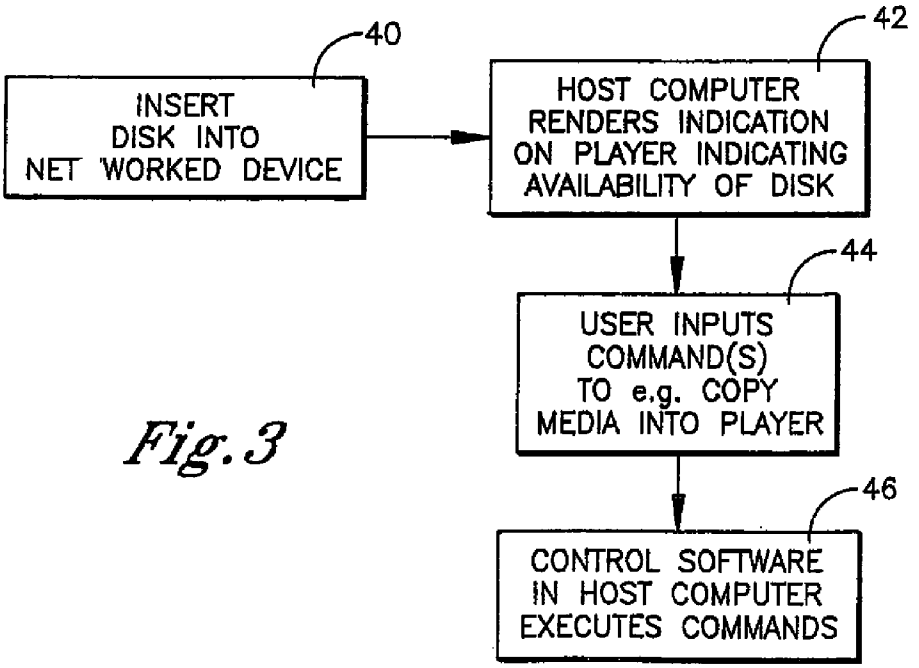

40
INSERT DISK INTO NET WORKED DEVICE
42
HOST COMPUTER RENDERS INDICATION ON PLAYER INDICATING AVAILABILITY OF DISK
44
USER INPUTS COMMAND(S) TO e.g. COPY MEDIA INTO PLAYER
46
CONTROL SOFTWARE IN HOST COMPUTER EXECUTES COMMANDS

Fig. 3

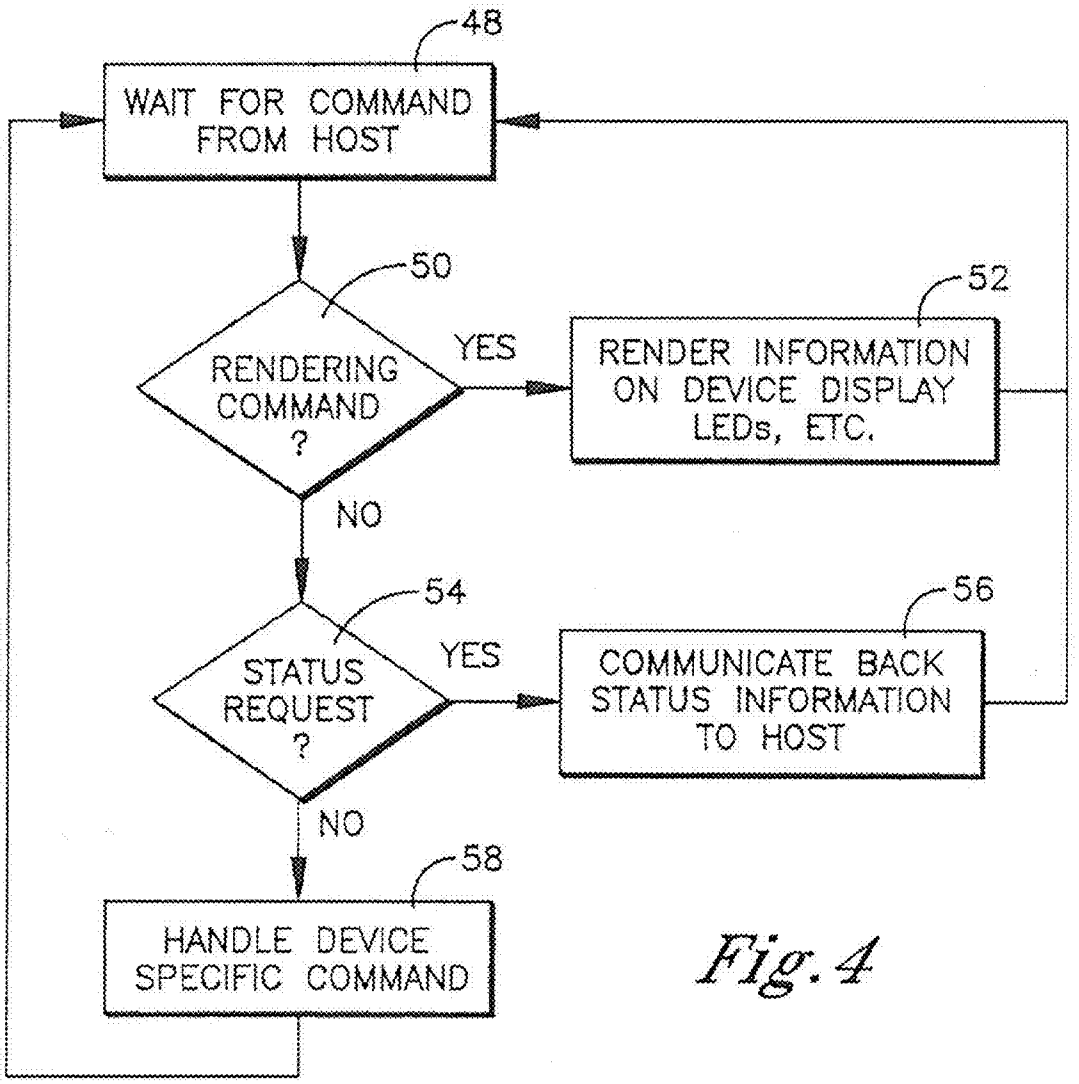

48
WAIT FOR COMMAND FROM HOST
50
RENDERING COMMAND ?
YES
52
RENDER INFORMATION ON DEVICE DISPLAY LEDs, ETC.
NO
54
STATUS REQUEST ?
YES
56
COMMUNICATE BACK STATUS INFORMATION TO HOST
NO
58
HANDLE DEVICE SPECIFIC COMMAND

Fig. 4

REMOTE USER INTERFACE FOR MEDIA PLAYER

This is a divisional application of co-pending U.S. patent application Ser. No. 10/289,482, filed Nov. 6, 2002, from which priority is claimed.

RELATED APPLICATIONS

This application claims priority from U.S. provisional application Ser. No. 60/407,174, filed Aug. 30, 2002, incorporated herein by reference.

FIELD OF THE INVENTION

The present invention relates generally to media player systems.

BACKGROUND

Media players such as digital music players and multimedia players have been introduced. Some of these players permit a user to transfer media, under control of a host computer operated by a user, between the player and the host computer, which might be networked. In this way, media titles that are available on the network can be conveniently transferred to the media player.

To manage the above-mentioned operations, control software is executed on the host computer. The control software is operated by a user at the host computer to present a graphical user interface (GUI) on the host computer, to facilitate, e.g., browsing for media titles and controlling the transfer of titles to the player.

As recognized by the present invention, the process discussed above requires a user to access the host computer, and to know how to operate the host computer. As further recognized by the present invention, it would be advantageous to permit the user to manage media transfer using the player itself, without requiring the player to have a relatively expensive processor capable of executing the operating software.

SUMMARY OF THE INVENTION

A system for managing media distribution includes a host computer and a media player that includes a display and at least one input device. The media player communicates with the host computer. A software-implemented control module in the host computer renders a user interface (UI) on the player, such that a user can manipulate the input device in cooperation with the UI to manage distribution of media between the host computer and player.

In a preferred embodiment, the user can manipulate the input device to cause the host computer to transfer a media stream to the player. The preferred input device may include one or more buttons on the player and, if desired, a jog dial, and a media stream can be downloaded to the player in response to the user depressing the button once and only once, without requiring the user to depress any other buttons. Also, the preferred player may include at least one light emitting diode (LED) and the host computer can energize the LED to indicate to the user the availability of a music title.

In other preferred, non-limiting embodiments, the host computer can periodically poll the player to determine player status. Preferably, the host computer polls the player more frequently when the player is in an active mode than when the player is in an energy-saving mode. The player may not be able to initiate communication with the host computer.

In another aspect, a method for providing at least one media stream to a media player includes engaging a data storage disk with a medium device to establish an engagement, and detecting the engagement. Using the host computer, an indication of the engagement is caused to be displayed on the media player. The method also includes manipulating a single button a single time on the media player to cause a media stream on the disk to be sent to the media player under control of the host computer.

In still another aspect, a media player includes electronic media storing at least one media stream, and means for playing the stream. A display for presenting a user interface (UI) generated by a host computer and transmitted from the host computer to the media player is also provided.

The details of the present invention, both as to its structure and operation, can best be understood in reference to the accompanying drawings, in which like reference numerals refer to like parts, and in which:

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a block diagram of a system of the present invention;

FIG. **2** is a flow chart of the overall logic;

FIG. **3** is a flow chart of exemplary non-limiting logic for managing media operations using the player, under control of software in the host computer; and

FIG. **4** is a flow chart of exemplary non-limiting logic that can be followed to manage media using a player that receives periodic status requests from the host processor.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring initially to FIG. **1**, a system is shown, generally designated **10**, that includes a portable media player **12**, such as a music player, e.g., a Sony Walkman® or other multimedia player with data storage capabilities, such as a Sony Memory Stick®, for storing digitally recorded songs and the like. The media player **12** also includes a play device that reads electronically stored streams on the data storage and transforms the streams into audible sounds in accordance with media stream playing principles known in the art, such as those embodied in a Sony Walkman®. The media player **12** can be a CD player.

The media player **12** can include a processor **14** and a display **16**, such as an LCD display, but unlike a personal computer, the processor **14** does not generate a graphics user interface (GUI) on the display **16** when undertaking the media management operations discussed below. By "GUI" or "UI" is meant the actual graphical elements necessary for control using a display, as opposed to data elements, such as media titles, that are displayed using an underlying GUI. In a less preferred embodiment, no display need be provided, only the below-described LEDs to indicate status.

The media player **12** can also include a user input device **18**, such as but not limited to buttons and/or jog dials. In one preferred non-limiting embodiment, the media player **12** includes a housing that can be worn on the belt of a person and headphones connected by a wire to the housing, with the display **16** and input device **18** (in the form of buttons and jog dial) being attached to the headphone wire, although all the components of the player **12** can be mounted on a single housing if desired. If desired, non-graphic indicators such as LEDs **20** (two shown) can be provided on the belt-worn portion of the player **12** for purposes to be shortly disclosed.

As shown in FIG. **1**, the system **10** includes a host computer **22** that communicates with the media player **12** via a communication path **24**. The path **24** can be a wire that uses a universal serial bus (USB) protocol, or a IEEE 1394 protocol, or a RS-232 protocol, or a 802.11 protocol. Or, the path **24** can be a short range wireless path such as Bluetooth, infrared, or other wireless path. The host computer **22** can be a personal computer or other computer associated with the user that executes a media management control module **26** in accordance with the logic below.

FIG. **1** also shows that one or more networked devices **28** can be connected to the host computer **22** either directly or through the Internet **30**. If desired, a networked device **28** can be connected directly to the player **12**. The networked devices **28** can be, without limitation, CD and DVD players that can receive, e.g., CD-ROMs on which music or other sound is recorded, and other computers. One of the networked devices **28** may be an Internet-accessible or otherwise accessible electronic music distribution server.

Now referring to FIG. **2**, the overall logic of the present invention can be seen. Commencing at block **32**, communication is established between the host computer **22** and the player **12**. In some embodiments the player **12** cannot initiate communication, so that the host computer **22** initiates the link at block **32**.

Moving to block **34**, the control software **26** in the host computer **22** downloads a GUI to the player **12** for display thereof on the display **16**. The GUI can, without limitation, indicate and support operations that may be executed by the host computer **22** in response to user input at the player **12**, as well as provide the necessary control means that enable the user to issue commands to cause the host computer **22** to execute the operations.

In any case, the processor **14** of the player **12** need not generate the GUI or even know how it functions. This makes the player **12** very robust, in that additional functionality can be provided simply by appropriately programming the host computer **22** without having to modify the relatively simple and inexpensive player **12**.

At block **36**, user commands generated by appropriately manipulating the input device **18** on the player **12** in conjunction with the GUI are received by the host computer **22**. These commands represent user management desires, e.g., a command to copy a stream from one of the devices on the network, such as all or part of the content of a CD player network device **28**, to another, such as the player **12**. The commands can also indicate updating the player display to allow the user to navigate through the menus. The commands from the player **12** are executed by the host computer **22** at block **38**.

FIG. **3** shows an exemplary one-click copy operation in accordance with the present invention. Commencing at block **40**, a user can engage a disk such as a CD or DVD with an appropriately configured network device **28**. The host computer **22** detects the engagement by, e.g., receiving a message indicative of the engagement from the network device **28**.

At block **42**, the host computer renders an indication on the player **12** that the disk has been engaged with the network device **28** and that digitally recorded streams, such as music or multimedia streams, are available for recording into the player **12**. A menu showing the available artists, and/or albums, and/or tracks, can be displayed. Without limitation, the indication can include one or more of the following: energizing the LED **20**, displaying the titles of available streams on the display **16**, and displaying a message on the display such as "copy disk?"

Moving to block **44**, the user manipulates the input device **18** as appropriate to input the desired command(s). In one preferred embodiment, the input device **18** includes a button, and the user simply depresses the button once and only once to cause the host processor to provide the player **12** with a copy of the available stream or streams—i.e., one-click copying. No other user action is required, either at the player **12**, host computer **22**, or network device **28**. Instead, at block **46** the control software of the host computer **22**, responsive to the command input at the player **12**, executes the command, in this case, by causing a copy of the available stream on the disk that was engaged at block **40** to be sent to the player **12**.

In another embodiment, the user of the player **12** may scroll through a list of titles presented on the GUI using the jog dial of the input device **18**. When the desired title is displayed, the user may depress a button of the input device **18** to receive a copy of the stream represented by the title. Still further, the GUI generated by the host processor **22** may display a list of available artists, with the user selecting one of the artists to cause a second menu or list of songs by that artist to appear on the display **16** of the player **12**, for subsequent selection of a particular song or songs by that artist.

FIG. **4** shows logic that can be executed to copy content to the player **12**. While the logic is shown in flow chart form with decision diamonds for convenience of disclosure, it is to be understood that the logic equivalently could be represented by a state diagram or other logic indicating convention.

Commencing at block **48**, a command from the host computer **22** is monitored for. Decision diamond **50** indicates that the command, when received, might be a command to render the GUI on the display **16** or energize an LED, in which case the logic moves to block **52** to render the GUI and/or energize the LED. Decision diamond **54**, on the other hand, indicates that the command may be a status request, in which case the logic moves to block **56** to communicate the status of the player **12** back to the host computer **22**. In one preferred non-limiting embodiment, to conserve energy the player **12** has an energy saving mode and an active mode. In the energy saving mode, the player **12** is quiescent, to conserve energy. When this status is reported to the host computer **22**, it issues status checks to the player **12** less frequently than it does when the player **12** is in the active mode, i.e., is being used to play a media stream. The user may exit the energy saving mode at any time by, e.g., depressing a button on the input device **18**.

Block **58** indicates that if the processor **14** determines that a command has been received but that it is not from the host computer **22**, it must be a device-specific command (such as "play track") that is executed locally.

While the particular REMOTE USER INTERFACE FOR MEDIA PLAYER as herein shown and described in detail is fully capable of attaining the above-described objects of the invention, it is to be understood that it is the presently preferred embodiment of the present invention and is thus representative of the subject matter which is broadly contemplated by the present invention, that the scope of the present invention fully encompasses other embodiments which may become obvious to those skilled in the art, and that the scope of the present invention is accordingly to be limited by nothing other than the appended claims, in which reference to an element in the singular is not intended to mean "one and only one" unless explicitly so stated, but rather "one or more". All structural and functional equivalents to the elements of the above-described preferred embodiment that are known or later come to be known to those of ordinary skill in the art are expressly incorporated herein by reference and are intended to be encompassed by the present claims. Moreover, it is not necessary for a device or method to address each and every problem sought to be solved by the present invention, for it to

be encompassed by the present claims. Furthermore, no element, component, or method step in the present disclosure is intended to be dedicated to the public regardless of whether the element, component, or method step is explicitly recited in the claims. No claim element herein is to be construed under the provisions of 35 U.S.C. §112, sixth paragraph, unless the element is expressly recited using the phrase "means for" or, in the case of a method claim, the element is recited as a "step" instead of an "act".

What is claimed is:

1. A media player, comprising:

electronic media storing at least one media stream;

a play device for playing the stream; and

a display for presenting a user interface (UI) generated by a host computer and transmitted from the host computer to the media player, wherein the media player is configured to respond to polling signals from the host computer to determine player status, wherein the player receives more potting signals from the host computer when the player is in an active mode than when the player is in an energy-saving mode, the player responding to at least some polling signals when in the energy-saving mode.

2. The media player of claim **1**, wherein the player cannot initiate communication with the host computer.

3. A system, comprising:

host computer;

media player configured for playing electronically-stored streams, the media player configured for communicating with the host computer;

at least a first processor for causing a media title to be displayed on the media player, the title being associated with a piece of music;

the first processor configured for facilitating, responsive to a click of a button on the media player, the music to be downloaded into the media player; and

at least a second processor the same as or different from the first processor configured for periodically polling the player using the host computer to determine player status, the second processor configured for determining whether the media player is in a power saving mode and responsive thereto establishing a frequency of polling.

4. The system of claim **3**, wherein the first processor is configured to cause the piece of music to be downloaded using one and only one click of a button.

5. The system of claim **3**, comprising:

a data storage disk engageable with a medium device to establish an engagement, the storage disk containing the media title;

the first processor being configured for detecting the engagement and for causing an indication of the engagement to be displayed on the media player.

6. The system of claim **5**, wherein the indication is established by energizing at least one LED.

7. The system of claim **5**, the first processor being configured for causing the media player to display a GUI generated by the host computer.

8. The system of claim **7**, wherein the GUI indicates the title in human readable form.

9. The system of claim **5**, wherein the media player cannot initiate communication with the host computer.

10. A system, comprising:

host computer;

media player for playing electronically-stored streams, the media player communicating with the host computer;

at least a first processor for causing a media title to be displayed on the media player, the title being associated with a piece of music;

the first processor facilitating, responsive to a click of a button on the media player, the music to be downloaded into the media player; and

at least a second processor the same as or different from the first processor periodically polling the player using the host computer to determine player status, the second processor being configured for polling the media player more frequently when the media player reports being in an active mode than when the media player reports being in an energy-saving mode.

11. The system of claim **10**, wherein the first processor is configured to cause the piece of music to be downloaded using one and only one click of a button.

12. The system of claim **10**, comprising:

a data storage disk engageable with a medium device to establish an engagement, the storage disk containing the media title;

the first processor being configured for detecting the engagement and for causing an indication of the engagement to be displayed on the media player.

13. The system of claim **12**, wherein the indication is established by energizing at least one LED.

14. The system of claim **12**, the first processor being configured for causing the media player to display a GUI generated by the host computer.

15. The system of claim **14**, wherein the GUI indicates the title in human readable form.

16. The system of claim **10**, wherein the media player cannot initiate communication with the host computer.

* * * * *